Xiao Wei /ɕiɑʊ wei/

Duke University, Durham, NC

Google Scholar | Personal Website | Email

EDUCATION

Duke University, Computer Science, MS   *Durham, NC | Sep. 2024 – Expected May. 2026*
- **GPA**: 3.88 / 4.00
- **Selected Courses**: Robotic Manipulation *(A)*, Intro to Medical Robotics in Surgery Tech *(FA25)*, Systems for Machine Learning *(A)*, Underactuated Robotics *(Self Learning)*

University of Michigan, Computer Science and Engineering, BSE   *Ann Arbor, MI | Sep. 2022 – May. 2024*
- **GPA**: 3.97 / 4.00
- **Selected Courses**: Applied Parallel Programming with GPUs *(A)*, Continuous Optimization Methods *(A)*, Introduction to NLP *(A)*, Compiler Construction *(A)*, Game Theory *(A)*

UM-SJTU Joint Institute, Electrical and Computer Engineering, BSE   *Shanghai, China | Sep. 2020 – Aug. 2024*
- **GPA**: 3.80 / 4.00
- **Selected Courses**: Discrete Mathematics *(A)*, Honors Mathematics II, III, IV *(A)*, Probabilistic Methods in Engineering *(A)*, Electronic Circuits *(A+)*

ACADEMIC PAPERS

- LAPP: Large Language Model Feedback for Preference-Driven Reinforcement Learning. Pingcheng Jian, **Xiao Wei**, Yanbaihui Liu, Samuel A. Moore, Michael M. Zavlanos, Boyuan Chen *(under review for TMLR)*

- dattri: A Library for Efficient Data Attribution. J Deng, Ting-Wei Li, S Zhang, S Liu, Y Pan, H Huang, X Wang, **X Wei**, P Hu, X Zhang, J Ma. *Neural Information Processing Systems*, volume 37, pages 136763–136781, 2024.

RESEARCH EXPERIENCE

Generalizable Learning of Space Division for Hybrid Force-Motion Control *(Ongoing Research)*
 Project Leader   *DexLab, Duke University | May. 2025 – Current*
- Learning efficiently from a few demonstrations for the kinematic and dynamical primitives
- Exploring force-motion subspace division automatically with reinforcement learning, based on the primitives
- Proposing to complete table wiping and box flipping tasks with HFMC with online policy

Large Language Model Feedback for Preference-Driven Reinforcement Learning
 Core Contributor   *GRL, Duke University | Sep. 2024 – Mar.2025*
- Developed LAPP, a novel framework integrating LLM-based preference prediction into reinforcement learning
- Enabled robots to perform complex tasks like gait control and backflips via language-guided behavior tuning
- Achieved superior performance and training efficiency over baselines across multiple benchmarks
- Independently implemented and conducted all experiments for dexterous manipulation tasks

Efficient Influence Function Calculation through Knowledge Distillation
 Individual Project   *TRAIS Lab, UIUC | Jun. 2023 – Jan. 2024*
- Proposed learning data attribution pattern from student model after knowledge distillation
- Reached high attribution similarity in self-distillation and both MLP settings
- Discontinued because of the relatively low performance and weak math guarantee

ACADEMIC PROJECTS

Generalizable Compliance Adaptor *(Ongoing Project)*   *Duke University | Jun. 2025 – Current*
- Designing data augmentation strategies to inject compliance profile into trajectory data and action spaces for policy
- Exploring variable compliance control model from trajectory-only dataset, and collect synthesis data
- Demonstrated a successful whirlwind jump behavior on Unitree GO2 in IsaacGym simulation

Stage-wise Reward Shaping via Coding LLMs   *Duke University | Feb. 2025 – May.2025*
- Automated the design process of stage-wise reward shaping for complex locomotion tasks

- Implemented the pipeline inspired by *Eureka: Human-Level Reward Design via Coding Large Language Models*
- Outperformed manually designed one-phase reward function on "whirlwind jump" locomotion in simulation

dattri: A Library for Efficient Data Attribution *TRAIS Lab, UIUC | Feb. 2024 – May. 2024*
- Implemented leave-one-out correlation evaluation method
- Contributed core methods (CG, LiSSA) for influence function calculations
- Built benchmarks on MNIST-10 for logistic regression and MLP models

Performance Recovery of Fully Quantized Models through Adaptors *EIC Lab, GaTech | Jun. 2023 – Aug. 2023*
- Proposed to add LoRA to MLP modules (linear layers) of fully quantized vision transformer
- Reached 9.4% increase in ImageNet classification accuracy with efficient fine-tuning

TEACHING EXPERIENCE

- **COMPSCI 330: Intro to Design & Analysis of Algorithms** *GTA | Duke University | SP25, FA25*
- **EECS 487: Intro to NLP** *UTA | University of Michigan | FA23*
- **EECS 490: Programming Language** *Grader | University of Michigan | FA23, WN23*

HONORS / AWARDS

- **James B. Angell Scholar** *University of Michigan | 2024*
- **The Jackson and Muriel Lum Scholarship** *University of Michigan | 2022*
- **University Honors** *University of Michigan | FA22, WN22, FA23*
- **Dean's Honor List** *University of Michigan | FA22, WN22, FA23*

ACADEMIC SERVICES

- **Journal Reviewer:** IEEE Transactions on Industrial Electronics (TIE)

SKILLS

- **Programming Languages**: Python (PyTorch, JAX, Brax), C++, Rust, MATLAB, JavaScript
- **Hardware Experience:** Franka Research 3, Unitree GO2, UR5e
- **Software Experience:** MuJoCo, IssacGym, IsaacLab, Deoxys, Franky